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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/531,262 | 03/17/2000 | Iosif Semen Zeylikovich | 9570-2 | 4992 |

826 7590 05/17/2005

ALSTON & BIRD LLP
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000

EXAMINER

NAKHJAVAN, SHERVIN K

ART UNIT PAPER NUMBER

2621

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------|-------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 09/531,262 | ZEYLIKOVICH ET AL | |
| | Examiner | Art Unit | |
| | Shervin Nakhjavan | 2621 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4-32 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,4-9 and 12-32 is/are allowed.
- 6) ☒ Claim(s) 10 and 11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Response to Arguments

1. Applicant's arguments, see remarks Pages 10-14, filed 11-22-04, with respect to the rejection(s) of claim(s) 1, 10, 12 and 18 under 35 U.S.C 103(a) have been fully considered and are persuasive in part. Applicant's arguments regarding the prior art of record to Alfano et al. (US 5,799,656), Essenpreis et al. (US 5,713,352); Ning (US 5,480,565) and Nelson et al. (US 5,999,836) individually or together not teaching the newly added feature of the signals are frequency-swept modulated across a *larger range of the frequencies* during the illumination of the suspicious region than during the initial illumination of the host medium of claim 1 and positioning the second light and detector on opposite sides of the host medium in an *offset relation and out of alignment* and further moving the light source and the detector in *tandem* such that the *offset relation is maintained* of claim 12 and, light positioner initially positioning the light source at a plurality of different positions that cover broad portion of the host medium to facilitate generation of the shadow image and, positioner subsequently positions the light source proximate that portion of the host medium that includes the suspicious region in an offset relation in direction transverse to the first direction from the detector of claim 18, are persuasive. Therefore, the rejection of claims 1, 4-9, 12 and 13-32 has been withdrawn. However, applicant's arguments with respect to claims 10 in view of the prior art above are not persuasive. Applicant alleges that invention of claim 10 is a two-step process as in claim 1 in which a shadow image is initially created and a suspicious region within the shadow image is then further illuminated with frequency-swept modulated signals. In addition, applicant alleges non of the prior art taken

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individually or in combination teach further newly added feature of the claim 10, the light source offset in this matter during a second illumination step in which frequency-swept modulated signals interrogate the suspicious region. Examiner agrees that the applicant's invention may be distinct from the prior art *as disclosed*, however the language of claim 10 does not equivalently distinguish between steps as in claim 1 clearly requiring modulation across a higher range of frequencies than the initial illumination range. The language of claim 10 specifically requires two steps, first illumination of the medium at only plurality of positions with no reference to the type of illumination, creating a shadow image with abnormality depicted as suspicious region and, a second illumination which requires illuminating at least the suspicious region (the phrase at least does not preclude the whole medium including the suspicious region being illuminated again) following creation of the shadow image using a frequency-swept modulated signals wherein the light source emitting light that propagates in a first direction at a position offset from the suspicious region (word offset from the suspicious region without further limitation does not preclude entire area of the medium including the suspicious area to be illuminated again) in a direction transverse to the first direction (being the direction of illumination) and detecting Nelson et al. alone teaches an illumination scheme (Fig. 1b) light sources 1 and 2 emit light in downward direction as being repositioned while moving in transverse direction) and this light could be frequency modulated (Column 18, Lines 15-18). In addition a newly cited prior art (US 6,671,540) also teaches multiple imaging of a tissue or medium including a *region of interest* or abnormal area. Therefore, the rejection of claims 10 and 11 remains.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson et al. (US 5,999,836) in view of Hochman (US6,671,540).

Regarding claim 11, Nelson teaches a method for detecting an abnormality in a host medium comprising: Illuminating the host medium at a plurality of different positions (Figure 1b, light sources 1 and 2 scanning a medium in parallel direction of the compression plate); detecting signals following propagation through the host medium and the abnormality within the host medium; creating a shadow image based upon the detected signals in which the abnormality is depicted as a suspicious region (while Nelson fails to specifically show a shadow image derived from scanning a medium, Hochman teaches a shadow image which includes a suspicious area Column 23, Lines 54-55, wherein the process of generating of the shadow image 1a is discussed in lines 28-37 of Column 23); illuminating at least that portion of the host medium that contains the suspicious region with frequency-swept modulated signals, following creation of the shadow image (Column 18, Lines 15-16, Nelson teaches frequency modulated illumination of the whole area inherently including at least the suspicious area), wherein illuminating the suspicious region comprises positioning a light source

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that is capable of emitting light that propagates in a first direction at a position offset from the suspicious region in a direction transverse to the first direction (Figure 1b of Nelson teaches light sources 1 and 2 capable of emitting light in the direction of the medium covering a whole area of the medium including at least the suspicious area within the broad scan of the tissue which the direction of travel of the illumination means 1 and 2 is in direction transverse to the direction of the beam); detecting the frequency-swept modulated signals following propagation through at least that portion of the host medium that contains the suspicious region (Figure 1b, the detectors behind plate b detect the signals including the suspicious area); and characterizing the abnormality based upon the detected frequency-swept modulated signals (Hochman, column 13, lines 39-45, wherein pathological characterization is performed on the area of interest including a tumor in an image);

Nelson teaches limitation of claim 11, said second step detecting step comprises one of moving a detector through a plurality of positions including at least on position aligned with the suspicious region and moving a detector along a linear path displaced from the suspicious region (Column 13, line 66 through Column 14, Line 7) wherein the scanning includes light sources moving along with the detectors from one side to the other side of the medium and at one time the detectors will be aligned with the suspicious area inherently since the scan covers the broad area of the medium).

It would have been obvious to an ordinary skilled person in the art to utilize Hochman's multi-imaging of a stained tissue and characterization of a detected tumor with Nelsons scanning scheme because, acquiring multiple images of a pre-stained and

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stained tissue of a tissue provides comparison basis in order to better identify an abnormal tissue and further characterization of the abnormal area facilitates identification of a cancerous tissue (Hochman, Column 5, Lines 55-61).

Allowable Subject Matter

4. The following is an examiner's statement of reasons for allowance: claims 1, 4-9, and 12-32 are allowed because, the prior art of record specifically Alfano et al. (US 5,799,656), Essenpreis et al. (US 5,713,352); Ning (US 5,480,565); Nelson et al. (US 5,999,836) and Hochman (US 6,671,540) individually or together do not teach the illuminating at least that portion of the host medium that contains the suspicious region with frequency-swept modulated signals, wherein signals are frequency-swept modulated across a *larger range of the frequencies* during the illumination of the suspicious region than during the initial illumination of the host medium of claim 1, positioning the light source and detector in the second illuminating and detecting steps on opposite sides of the host medium in an *offset relation and out of alignment* and further moving the light source and the detector in *tandem* such that the *offset relation is maintained* of claim 12 and light positioner initially positioning the light source at a plurality of different positions that covers *broad portion* of the host medium to facilitate generation of the shadow image and, positioner subsequently positions the light source *proximate that portion of the host medium that includes the suspicious region* in an offset relation in direction transverse to the first direction from the detector of claim 18 combined with other features and elements of the claims.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact information

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (571) 272-7395. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta, can be reached at (571)272-7453.

Any response to this action should be mailed to:
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Or faxed to:
(703) 872-9306 for *formal* communications,

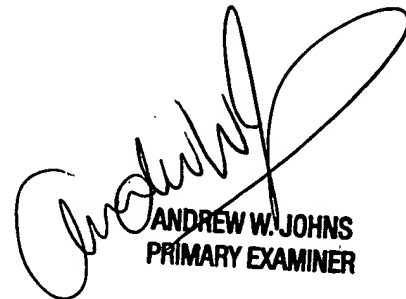
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Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2600 customer service office **(571) 272-2600**.

Shervin Nakhjavan *S.N*
Patent Examiner
Group Art Unit 2621
May 6, 2005.


**ANDREW W. JOHNS
PRIMARY EXAMINER**